

Claims

1. A display system having an electronically controllable viewing window, said display system comprising:
  - a display for generating an image that is viewable within a viewing window;
  - a backlight disposed behind the display for generating light for illuminating the display;
  - a light control medium for controlling directivity of the light illuminated on the display such that the generated image is viewable in one of a first viewing window and a second viewing window; and
  - a control device for controlling the light control medium to change the viewing window to the other of the first viewing window and second viewing window.
2. The display system as defined in claim 1, wherein the display system is employed in a vehicle and is viewable in the first viewing window by first and second occupants in the vehicle, wherein the control device controls the light control medium to change the first viewing window to the second viewing window to prevent one of the first and second occupants from viewing the image and allow viewing by the other of the first and second occupants.
3. The display system as defined in claim 2, wherein the first and second occupants comprise a driver of the vehicle and a passenger in the vehicle, and wherein the driver is prevented from viewing the image in the second viewing window.
4. The display system as defined in claim 1, wherein the light control medium comprises a light control film and a diffuser medium.

5. The display system as defined in claim 4, wherein the light control film comprises a micro louver film.

6. The display system as defined in claim 4, wherein the light control film comprises a micro-lens film.

7. The display system as defined in claim 4, wherein the diffuser medium comprises a polymer dispersed liquid crystal display.

8. The display system as defined in claim 1, wherein the display comprises a liquid crystal display.

9. The display system as defined in claim 1, wherein the control device changes the viewing window based on whether the vehicle is moving or not.

10. A display system for use in a vehicle for displaying images to first and second occupants of the vehicle within an electronically controllable viewing window, said display system comprising:

a display for generating an image that is viewable within a viewing window;

a backlight disposed behind the display for generating light for illuminating the display;

a light control medium for controlling directivity of the light illuminated on the display such that the generated image is viewable in one of a first viewing window and a second viewing window; and

a control device for controlling the light control medium to selected the first viewing window to allow viewing by both the first and second occupants of the vehicle in a first condition and to select the second window to prevent viewing by one of the first and second occupants in a second condition.

11. The display system as defined in claim 10, wherein the first and second occupants comprise a driver of the vehicle and a passenger of the vehicle, wherein the driver of the vehicle is prevented from viewing the image in the second viewing window during the second condition.

12. The display system as defined in claim 10, wherein the light control medium comprises a light control film and a diffuser medium.

13. The display system as defined in claim 12, wherein the light control film comprises a micro louver film.

14. The display system as defined in claim 12, wherein the light control film comprises a micro-lens film.

15. The display system as defined in claim 12, wherein the diffuser medium comprises a polymer dispersed liquid crystal display.

16. The display system as defined in claim 10, wherein the display comprises a liquid crystal display.

17. The display system as defined in claim 10, wherein the control device changes the viewing window based on whether the vehicle is moving or not.

18. A method of controlling a viewing window of a display to provide a first viewing window during a first condition and a second viewing window during a second condition, said method comprising the steps of:

generating light for illuminating a display;

passing the light through a light control medium so as to generate directional light rays;  
illuminating the display with the directional light rays to provide an image in a first viewing window;  
redirecting the directional light rays; and  
illuminating the display with the redirected directional light rays to provide an image in a second viewing window.

19. The method as defined in claim 18, wherein the method is employed on a vehicle to provide the first viewing window for viewing by first and second occupants of the vehicle, and the second viewing window is provided for viewing by only one of the first and second occupants of the vehicle.

20. The method as defined in claim 19, wherein the first occupant of the vehicle is the driver of the vehicle and the second occupant of the vehicle is a passenger in the vehicle, and said second viewing window prevents viewing by the driver of the vehicle.

21. The method as defined in claim 20 further comprising the steps of determining if the vehicle is moving and controlling the display to illuminate the display with the redirected directional light to provide the image on the second viewing window, wherein the driver of the vehicle is prevented from viewing the image in the second viewing window when the vehicle is moving.

22. The method as defined in claim 18, wherein the step of passing the light through the light control medium comprises passing the light through a light control film and a diffuser medium.

23. The method as defined in claim 18, wherein the step of passing the light through a light control medium comprises passing the light through a light control film and a polymer dispersed liquid crystal display.